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1898. *b.* March 14. Length about 1″.

1898. *c.* March 14. Length, 3½″; time taken in passing the central meridian on March 14 and 31, about 20 minutes. A measure of the length on March 19 was 3″.

These were all difficult objects to measure, even on good nights.

OBSERVATIONS OF PHENOMENA OF *JUPITER'S* SATELLITES WITH THE 9-INCH COOKE EQUATORIAL REFRACTOR.

Day of Obs. 1897.	Satellite.	Phenomenon.	Phase.	G.M.T. of Observation. h m s	G.M.T. of *N. Almanac.* h m s
Oct. 20	I. (*a*)	Ec. D.	Fading	17 22	17 23 35
			Just gone	17 23 27	
1898. Feb. 21	II. (*b*)	Ec. D.	Fading	12 22	12 25 27
			Bisected ?	12 24 30	
			Just gone	12 25 31	
	I. (*b*)	Ec. D.	Fading ?	14 23	14 24 14
			Bisected ?	14 24	
			Just gone ?	14 25	
23	II. (*c*)	Tr. E.	External contact	11 4	11 3
	I.	Oc. R.	External contact	11 45	11 46
Mar. 2	III. (*d*)	Tr. I.	External contact	10 6	10 10
			Bisection	10 9	
			Internal contact	10 13	
	III.	Tr. E.	Internal contact	12 22	12 33
			Bisection	12 28	
			External contact	12 33	
	III. (*d*)	Sh. E.	Internal contact	10 30	10 38
			Bisection	10 34	
			Just off	10 36 30	
	I. (*e*)	Ec. D.	Fading	10 43	10 45 50
			Bisection	10 45 30	
			Just gone	10 46 0	
	II.	Tr. I.	External contact	10 47 30	10 51
			Bisection	10 49	
			Internal contact	10 52	
	II. (*f*)	Sh. E.	Internal contact	12 14	12 18
			Just off	12 17	
	II.	Tr. E.	Internal contact	13 12	13 19
			Bisection	13 14	
			External contact	13 16	

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Day of Obs.		Satellite.	Phenomenon.	Phase.	G.M.T. of Observation.			G.M.T. of *N. Almanac.*		
1898.					h	m	s	h	m	s
Mar.	3	I. (*f*)	Sh. E.	Internal contact	10	12		10	12	
		I.	Tr. E.	Internal contact	10	37		10	42	
				External contact	10	43				
	10	I.	Sh. E.	Internal contact	12	5		12	6	
				Bisected	12	6				
		I.	Tr. E.	External contact	12	27		12	27	
	20	III. (*g*)	Oc. D.	External contact	8	57		8	56	
May	3	I.	Oc. D.	External contact	8	29		8	29	
				Bisection	8	31				
				Just gone	8	32				
		I.	Ec. R.	First seen	11	31	58	11	32	11
				Bisection ?	11	33				
				Full ?	11	36				
	4	I. (*h*)	Tr. E.	Internal contact	7	59		8	2	
				Bisection	8	1				
				External contact	8	3				
		I.	Sh. E.	Internal contact	8	49		8	53	
	11	I.	Tr. I.	External contact	7	36		7	35	
				Internal contact	7	40				
	12	I.	Ec. R.	First seen	7	55	36	7	55	11
				Full ?	7	58				
	14	II. (*i*)	Ec. R.	First seen	8	56	1	8	56	6
	18	I.	Tr. I.	External contact	9	24		9	24	
				Bisection	9	27				
				Internal contact	9	29				
		I.	Sh. I. (*j*)	Internal contact	10	30		10	28	
June	10	I.	Tr. I. (*j*)	External contact	9	28		9	27	
				Internal contact	9	33				
		III.	Tr. I. (*j*)	External contact	10	24		10	23	
				Internal contact	10	29				
		I. was on the central meridian about 10^{h} 33^{m}								
	17	IV.	Tr. I.	External contact ?	9	30		9	45	
	28	III. (*k*)	Oc. D.	External contact	8	17	30	8	17	
				Bisection	8	20				
				Just gone	8	23				
July	9	Shadow of III. on central meridian about 8^{h} 30^{m}								
	11	I. (*l*)	Oc. D.	External contact				8	45	

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Notes.

(*a*) Planet low; strong twilight. (*b*) Clouds passing. (*c*) Much boiling. (*d*) Very difficult and uncertain, owing to motion and to fact that the ingress occurred near N. pole. (*e*) Clouds passing. (*f*) Much boiling on limb. (*g*) Bad definition. (*h*) Much motion. (*i*) Very bad definition. (*j*) Bad definition. (*k*) Bright sunshine; much motion. (*l*) Much motion.

Powers used 150 and 240.

Notes on Certain Phenomena presented by *Jupiter's* Satellites and their Shadows during Transit across the Disc.

1898 March 2. III. When the shadow of this satellite was approaching the W. limb (egress) it was large, black, and elongated in a direction parallel to the belts. The satellite passed on to the disc about $10^h\ 9^m$; at $10^h\ 50^m$ it was seen as a dusky or grey spot; became invisible about $10^h\ 20^m$; and reappeared as a bright object about $12^h\ 10^m$. It moved along the S. edge of the N. polar shading. Sat. II. was invisible at $11^h\ 2^m$.

March 3. I. in transit; it was invisible at 9^h, and so remained till $10^h\ 20^m$.

March 10. I. in transit. It was invisible at $10\frac{1}{2}^h$, and so remained till $12\frac{1}{4}^h$.

May 11. I. in transit. The satellite moved along the bright zone *d*, *i.e.* the N. tropical zone. It was a bright object on the disc at $7^h\ 45^m$; then faint; invisible at 8^h; reappeared at $8^h\ 10^m$ as a very faint grey spot; much darker at $8\frac{1}{2}^h$; as black as a shadow at 9^h, and so remained till after 10^h, when cloud and rain stopped further observation. It was on the central meridian about $9^h\ 27^m$.

May 18. I. in transit, moving along the bright zone *d*. Ingress about $9^h\ 27^m$; $9\frac{1}{2}^h$ fainter; $9^h\ 40^m$ much fainter; $9^h\ 45^m$ just visible; $9^h\ 50^m$ invisible; 10^h just visible as a grey spot; $10^h\ 10^m$ a little darker; 10^h to $10\frac{1}{2}^h$ a grey spot, not dark. It had grown no darker at 11^h and $11\frac{1}{2}^h$, when clouds prevented further observation.

June 10. I. in transit, moving along the bright zone *d*. Ingress about $9^h\ 33^m$; $9^h\ 35^m$ fainter; $9^h\ 50^m$ just visible; 10^h invisible; $10^h\ 10^m$ a grey spot, and there was no further change up to 11^h. It was on the central meridian about $10^h\ 33^m$.

Sat. III. in transit moving along the S. edge of the N. polar shading; at 11^h it was very faint indeed.

June 17. IV. in transit moving in the grey N. polar region, and not far from the pole; at $9^h\ 33^m$ it was perhaps just fully on the disc; $9^h\ 40^m$ invisible; $9^h\ 50^m$ a faint grey spot; 10^h spot a little darker; $10^h\ 10^m$ still darker, and so it remained till $10^h\ 30^m$, when clouds hid the planet; it was not black.

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Observations of the Variable Stars (2100) *U Orionis and* (4896) *T Centauri.* By Colonel E. E. Markwick.

U Orionis.—There has been some discussion as to the length of period of this star, which is even now to a certain extent unsettled, although better known than when the data were more limited, for the star has only been observed as a variable since 1885 December 13, when it was first discovered by Mr. Gore. The discoverer made the period 373·47 days (see *Monthly Notices*, vol. l. p. 518). Dr. Chandler in his 2nd Cat. of Variable Stars gave 371 days, with periodic inequality. In the 3rd Cat. this period is changed to 375 days, and I think from what follows this latter period is not far from the truth.

I have observed this star at every period of maximum from 1886 to 1898, except the year 1893, when only one observation was made. The observations have been made usually with a binocular magnifying five times, supplemented by a $2\frac{3}{4}$-inch refractor. My "date of maximum" is the day on which the star's brightness, when reduced from the comparison stars, was actually greatest. It has not been taken symmetrically as regards the light curve near time of maximum.

The comparison stars and brightness are as follows, the latter being mostly adopted from the *Harvard Photometry* :—

			m.
D.M.	+ 20	1156	6·57
	+ 19	1126	5·85
	+ 19	1110	6·08
	+ 20	1171	8·2
	+ 20	1168	8·6
	+ 20	1172	10·0
χ^1 Orionis			4·65
χ^3 „ (Proctor) = H.P. 1119			5·08

The light curve of this star is very flat near maximum, hence there are bound to be considerable divergencies between the results of different observers. I have therefore taken the mean of my own and all the observations to be found in the summaries of astronomical publications given in the *Journal* of the *B. A. A.* The following table shows my dates of maximum with observed brightness, also the mean of all the observed dates of maximum from 1892, this portion being a revision and continuation of the table at p. 531 of *Monthly Notices*, vol. liv. The last column gives the interval in days between these mean results :—